

## 2014 Elk River, West Virginia Chemical Spill Air Enforcement Briefing

### The Facility & the Leaky Tank

- Etowah River Terminal, owned by Freedom Industries, is located on the Elk River in Charleston, WV. A drinking water intake is one mile down river.
- Freedom Industries acts as a broker, purchasing bulk chemicals from Eastman and Dow (among others) and selling them to coal mines and other industrial facilities.
- Total facility storage capacity is 4,000,000 gallons of liquid chemicals.
- **No processing or manufacturing on site**, just mixing and storage.
- About 7,500 gallons are estimated to have leaked from a 40,000 gallon capacity tank during the spill.

### What Happened (Air Focus)

- January 9 – In the late morning, State **air inspectors** inspect the facility in response to several odor complaints received and find the leaking tank, reported to contain MCHM. The material has already breached the secondary containment, but no clean-up has begun.<sup>1</sup>
- January 9 – In the evening, the drinking ban is issued.
- January 10 – **State Division of Air Quality issues NOV** to Freedom Industries for violating a state regulation: “No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.”
- January 21 – Company reveals that a second chemical, PPH, was in the leaking tank
- January 31 – Test reveals formaldehyde in Charleston municipal water supply (source still unclear)

### The Chemicals

- Crude MCHM is a mix of six compounds (the only HAP is methanol, which accounts for 1% of the crude MCHM, by weight):
  - Crude MCMH is used at coal-processing plants to separate fine particles of coal from the surrounding rock in a process called "froth flotation." **It is mainly used to process coking coal for metallurgy rather than steam coal for power plants.**
  - Crude MCMH has a very low odor detection threshold and smells of sweet licorice.
- “PPH, stripped” (later identified to be about 7.3% of the leaked mixture, by weight) is a proprietary blend thought to contain DiPPH Glycol Ether, and PPH Glycol Ether (both HAPs, though not very volatile)
- MCHM may break down into formaldehyde. Formaldehyde is a toxic and volatile HAP.<sup>2</sup>

### Chemical Storage in Region 5

- In Illinois alone, at least 49 facilities offer storage of liquid chemicals operating on a commercial scale.<sup>3</sup>

<sup>1</sup> There are some conflicting reports on timeline for the discovery and reporting of the leak. This story seems the most plausible, though the company claims they had already begun clean up.

<sup>2</sup> [http://www.nytimes.com/2014/01/30/us/tests-said-to-find-formaldehyde-in-west-virginia-tap-water.html?src=rechp&\\_r=1](http://www.nytimes.com/2014/01/30/us/tests-said-to-find-formaldehyde-in-west-virginia-tap-water.html?src=rechp&_r=1)

<sup>3</sup> According to industry data from tankterminals.com

- One of the largest is Fort Transfer located in Morton, Illinois
  - Total capacity of 2.6 million gallons
  - No air permit or air inspections. (Possibly subject to NSPS Subpart Kb and others, see below)
- Because of the way SIC/NAICS codes are set up, it is difficult to use them to identify bulk chemical storage facilities, though large ones can be identified through commercial data.
- Tanks that are leaking hydrocarbons or related compounds to the air can potentially be identified with an IR camera and may be subject to 112(r) if the material is a HAP.

### **Thoughts on Air Hook for Storage Tanks Generally**

- Multiple regulations for storage tanks at major sources of HAPS:
  - Part 63, Subpart EEEE: Organic Liquids Distribution
  - Part 63, Subpart OO: National Emission Standards for Tanks—Level 1
  - Part 63, Subpart WW: National Emission Standards for Tanks—Control Level 2
- NSPS, applies to non-HAP VOCs, but lots of restrictions on applicability
  - Part 60, Subpart Kb: Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984. (The Etowah facility would not have been subject because it was too old)
- **General Duty Clause from 112(r)** – “maintain a safe facility”<sup>4</sup> (only tanks containing certain chemicals)
- No area source MACTs for storage facilities
- R5 currently participating in a National Tank Enforcement Initiative (with HQ OECA and others) to identify tank farms in sensitive areas, standardize inspection methods and develop enforcement cases. The plan is based on using available technology to identify leaking hydrocarbons.

### **Coal Washing Background & Regulations**

- Coal washing (also called coal preparation or beneficiation) removes sulfur, ash, rock and other impurities from raw coal, resulting in a coal product with higher thermal energy and less potential air pollutants.
- Coal washing often takes place at or near the mine site, though one plant may serve several coal mines.
- While other coal cleaning practices are also emission sources, chemical coal washing using material like MCHM is much less common than physical cleaning or washing.<sup>5</sup>
- The **NSPS for coal preparation plants** (Subpart Y) was promulgated in 1976. The standards specify emission limits for PM from thermal dryers and pneumatic cleaning equipment sources; and opacity limits for fugitive emissions. They do not address chemical washing or chemical storage.
- AP-42 establishes emission factors for various physical coal cleaning processes (1995).

### **Coal Washing in Region 5**

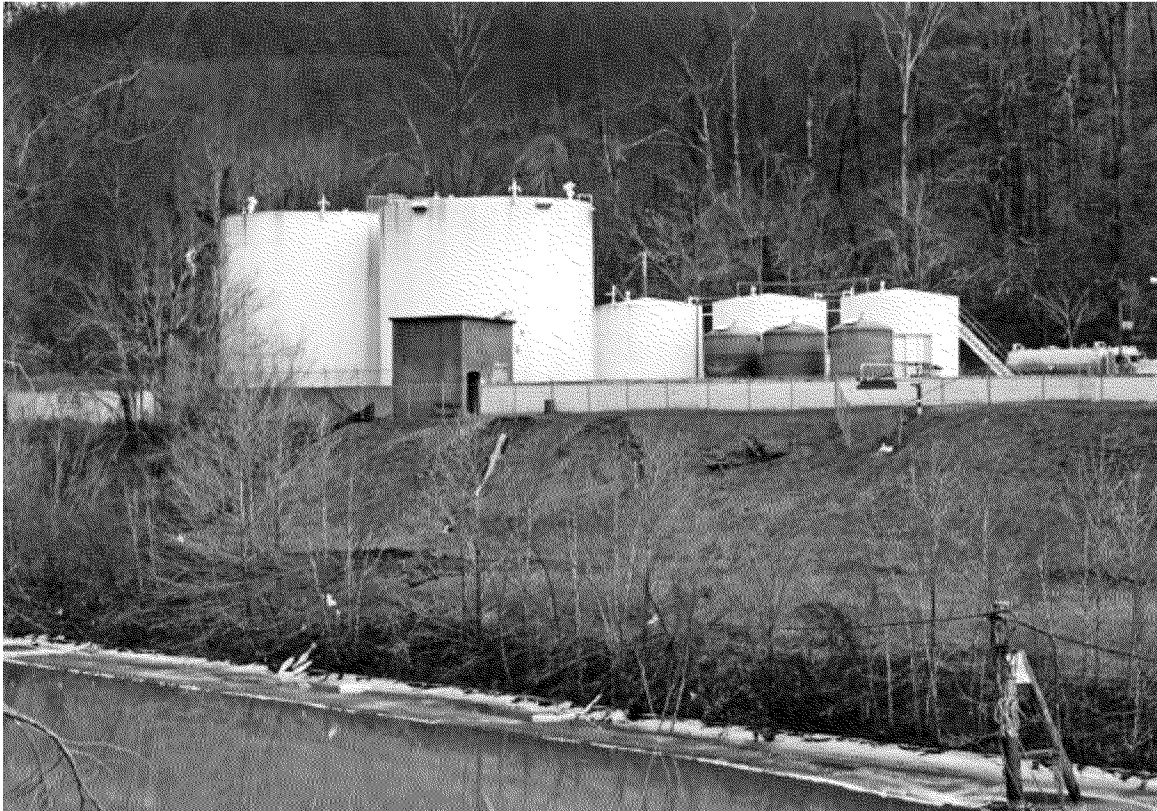
- According to a 2011 industry survey, there are 17 coal preparation plants are in operation in Illinois, 20 in

<sup>4</sup> According to 112(r), the owners and operators of stationary sources producing, processing, handling, or storing substances listed pursuant to Section 112(r)(3), or any other extremely hazardous substance, “have a general duty, in the same manner and to the same extent as section 654, title 29 of the USC, to identify hazards which may result from such releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur.”

<sup>5</sup> According to EPA document on Coal Cleaning (AP42 11.10-1, 11/95)

Indiana, and 20 in Ohio.

- Also, in Region 5, there are 124 facilities listed as participating in coal mining or support activities, meaning they may implement chemical washing of coal<sup>6</sup>
  - 92 of these facilities have air permits (according to ECHO)
  - 6 of these facilities are on the Title V program in AFS (all in IL)
- AECAB has investigated and required testing at one coal processing facility in Ohio (at the time of the investigation, coal was not chemically washed at that site). Testing results at a thermal dryer showed lower than expected emissions and did not precipitate any enforcement.



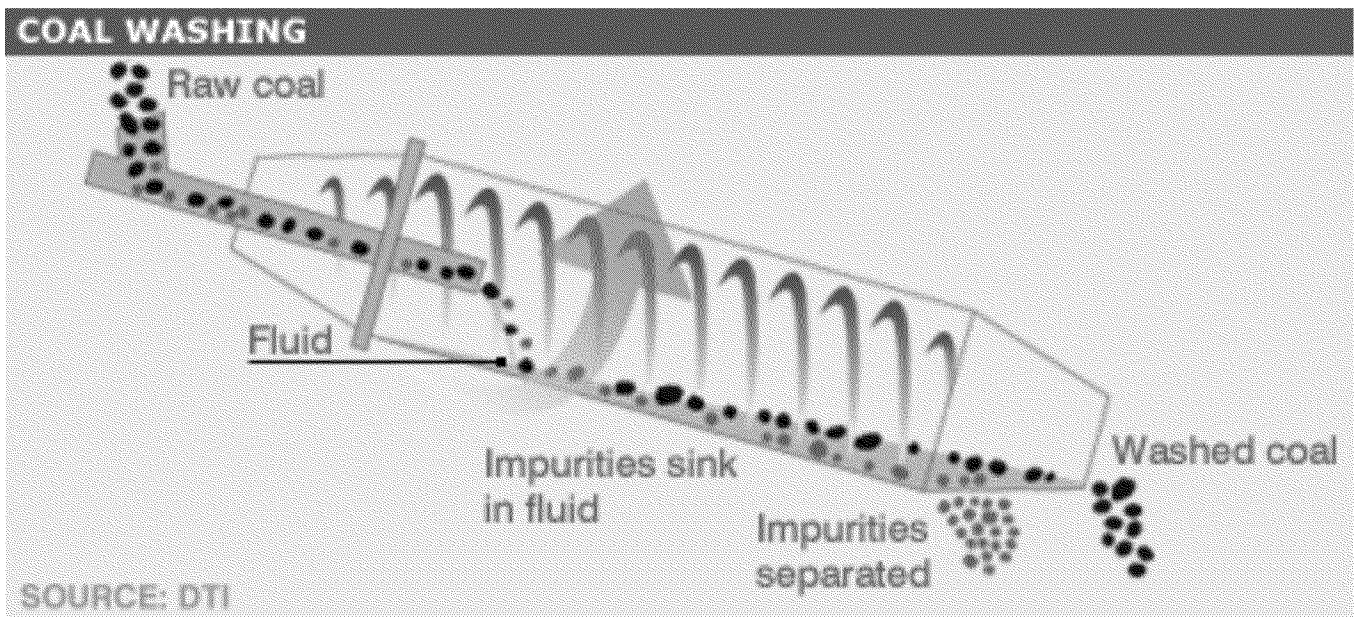
Freedom Industries on the Elk River, West Virginia

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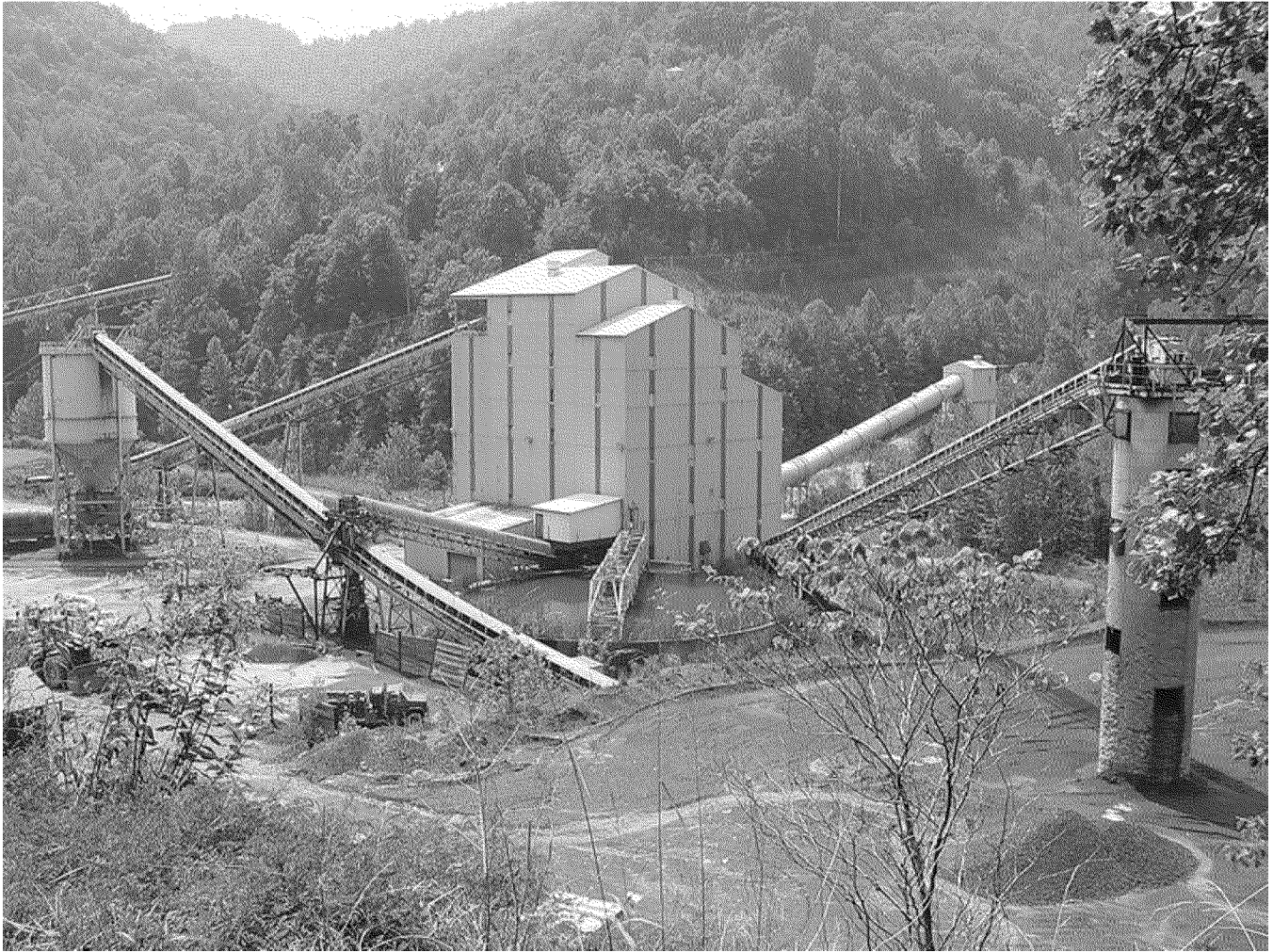
<sup>6</sup> In AFS, by NAICS codes (212111, 212112, 212113, 212114)



The leaking tank at Freedom Industries & the molecular structure of MCHM



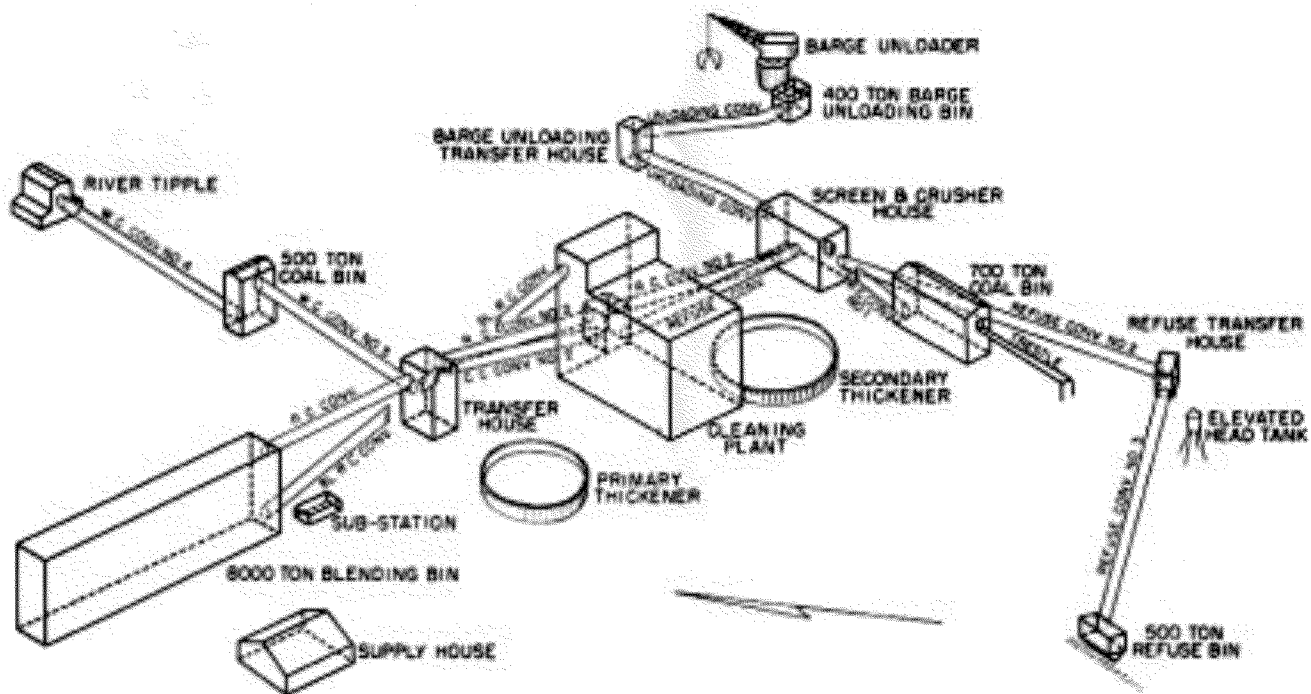




Coal Washing Facility located in Kentucky



Coal Washing Facility located in Pennsylvania



MAPLE CREEK PREPARATION PLANT SURFACE FACILITIES